

Claims

- [c1] 1.A temporal image processing system comprising:
a temporal processing controller adapted to receive a first image signal and a second image signal from a scanning unit,
said temporal processing controller comprising a registration module adapted to register a region of interest of said first image signal and said second image signal, said registration module further adapted to generate therefrom a registration signal, said temporal processing controller further comprising a confidence module adapted to receive said registration signal and further adapted to determine a confidence map therefrom, said confidence map adapted to enhance a contrast of a temporal change in said object relative to a contrast due to at least one misregistration.
- [c2] 2.The system of claim 1, wherein for said region of interest comprising a minor region of said object, at least one rigid body registration transformation including at least one of translation, rotation, magnification, or shearing is a criterion used to register said first image signal and said second image signal.
- [c3] 3.The system of claim 1, wherein for said region of interest including a major region of said object, at least one warped transformation is a criterion used to register said first image signal and said second image signal.
- [c4] 4.The system of claim 3, wherein said at least one warped transformation is implemented through multi-region, multi-scale, pyramidal logic designed such that a different cost function is adapted to highlight changes between said first image signal and said second image signal for a plurality at each of a plurality of scales.
- [c5] 5.The system of claim 4, wherein said cost function includes at least one of mathematical correlation, sign-change measurement, or statistical analysis.
- [c6] 6.The system of claim 1, wherein said confidence module is adapted to receive at least one of said cost function and a figure of merit of said cost function, said confidence module further adapted to generate said confidence map therefrom.
- [c7] 7.The system of claim 1, wherein said confidence module is adapted to

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major region of interest of said object within said first image signal and said second image signal through at least one warped transformation criterion.

- [c14] 14.The method of claim 13 wherein registering further comprises registering a major region of interest of said object within said first image signal and said second image signal through at least one warped transformation criterion including multi-region, multi-scale, pyramidal logic; and highlighting changes between said first image signal and said second image signal with a different cost function at each of a plurality of scales.
- [c15] 15.The method of claim 14, wherein said cost function includes at least one of mathematical correlation, sign-change measurement, or statistical analysis.
- [c16] 16.The method of claim 9 wherein generating a confidence map from said cost signal further comprising receiving in said confidence module at least one of a cost-function or a figure of merit of said cost function; and generating a confidence map from said at least one of said cost function or a figure of merit of said cost function.
- [c17] 17.The system of claim 9, further comprising illustrating a difference between said first image signal and said second image signal according to whether said difference is resultant from an anatomical change or said at least one misregistration.
- [c18] 18.The system of claim 9, further comprising regulating a relative importance of said confidence map with a sensitivity metric, which is either embedded or adapted for user operation.
- [c19] 19.A temporal image processing system comprising:
a scanning unit adapted to scan an object and generate a first image signal and a second image signal of said object; and
an image controller coupled to said scanning unit and adapted to receive said first image signal and said second image signal,
said image controller comprising a temporal processing controller adapted to receive said first image signal and said second image signal in a registration module, register at least one region of interest of said first image signal and

said second image signal such that at least one cost signal is generated,
generate a confidence map from said cost signal thereby enhancing a temporal
change contrast between said first image signal and said second image signal,
and generate at least one distinguishing characteristic between a contrast of
temporal changes between said first image signal and said second image signal
and a contrast resultant from at least one misregistration.

[c20] 20. The system of claim 19, wherein said scanning unit comprises one of a CT
scanning unit, an x-ray scanning unit, an MRI scanning unit, a PET, a
radionuclide imaging system, an ultrasound imaging unit, or an optical imaging
unit.